Linguistic implications of contacts between (agriculturalists) Bantu and Hunter-Gatherers

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Bantu migrations

4000 BP
±± ±±

2500 BP
±± ±±

2000 BP
±± ±±

1500 BP
±± ±±

3000 BP

±2 000 BP ?

±2 500 BP

±1 500 BP

Major dispersals

Minor dispersals
Major Bantu subdivisions
Bastin and Piron 1999
Hunter-gatherers

• How many different groups?

• Pygmies?

• Khoe San?

• Other groups?
Affiche de dispersion des Pygmées
D'après M. le Commandant Holbeau
Septembre 1929
ÉCHELLE : 1/600000°
CARTE II — LES PYGMÉES
(d'après H. GUILLAUME et d'autres, modifiée)
Repartition des Pygmées Afrique centrale
Linguistic Groupings
of Hunter-gatherers

Bantu (Niger-Congo)
Ubangi (Niger-Congo)
Central Sudanic (Nilo-Saharan)
Eastern Sudanic (Nilo-Saharan)
Cushitic (Afro-Asiatic)
Khoisan
Unclassified
<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Approximate Population</th>
<th>Linguistic Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aka (Mbenzele dialectal subgroup)</td>
<td>35,000</td>
<td>Bantu</td>
</tr>
<tr>
<td>Asua</td>
<td>3,000</td>
<td>Sudanic</td>
</tr>
<tr>
<td>Efe</td>
<td>10,000</td>
<td>Sudanic</td>
</tr>
<tr>
<td>Baka (known as Bangombe in some areas)</td>
<td>40,000</td>
<td>Oubanguian</td>
</tr>
<tr>
<td>Bofi</td>
<td>3,000</td>
<td>Oubanguian</td>
</tr>
<tr>
<td>Bongo (also known as Akoa)</td>
<td>2,000</td>
<td>Bantu</td>
</tr>
<tr>
<td>Kola (also known as Gyeli)</td>
<td>3,500</td>
<td>Bantu</td>
</tr>
<tr>
<td>Mbuti-Sua</td>
<td>7,500</td>
<td>Bantu</td>
</tr>
<tr>
<td>Medzan (also known as Tikar)</td>
<td>250</td>
<td>Bantu</td>
</tr>
<tr>
<td>Nsua</td>
<td>1,000</td>
<td>Bantu</td>
</tr>
<tr>
<td>Twa (Ntomba region)</td>
<td>14,000</td>
<td>Bantu</td>
</tr>
<tr>
<td>Twa (Kasai region)</td>
<td>?</td>
<td>Bantu</td>
</tr>
<tr>
<td>Twa (Rwanda and Burundi region)</td>
<td>10,000</td>
<td>Bantu</td>
</tr>
</tbody>
</table>

Table 1. Major ethnolinguistic groups of Congo Basin hunter-gatherers.
Linguistic Classification of Pygmy groups

- Gyeli (Cameroon) Bantu A80
- Baka (Cameroon, Gabon) Ubangian
- Kola (Gabon) Bantu B20
- Bongo (Gabon) Bantu B30, 40, 50, 60, 70
- Aka (CAR, Congo) Bantu C10
- Twa (Mongo) (DRC) Bantu C60
- Cwa (Kuba) (DRC) Bantu C80
- Bambote (Lake Tanganyika, DRC) Bantu D20
- Sua-Mbuti (Ituri, DRC) Bantu D30
- Twa (Rwanda, Uganda, DRC) Bantu J60
- Cwa (Luba) (Katanga, DRC) Bantu L30
- Sua-Efe (Ituri, DRC) Central Sudanic
- Asua (Aka) (Ituri, DRC) Central Sudanic
Genetic Study

• Large scale genetic study of North Western Bantu populations from 2002-2005:
  (over 1000 samples from 18 ethnic groups and 5 pygmy groups)

• Interdisciplinary collaborations:
genetics, linguistics, anthropology

• Choice of populations made on the basis of « historical » questions

• Choice of « subjects » on the basis of genealogies

• Data treated and analyzed in three laboratories
  (Franceville, Paris (Mt DNA), Barcelona (Y Chromo))
Publications


Results from Mt DNA
Quintana Murci et al, PNAS, 2008

Stress 0.10 Basal
Population relationships: tire collection

Highly homogeneous groups of Bantu-speaking agriculturalists

Western Pygmies

Eastern Pygmies

Quintana Murci et al, PNAS, 2008
Percentages of Molecular Variance in Bantu-speakers agriculturalists:
- Among Pops: 1%
- Within Pops: 99%

Percentages of Molecular Variance in Pygmy hunter-gatherers:
- Within Pops: 51%
- Among Pops: 49%

Percentages of Molecular Variance in the entire collection:
- Within Pops: 92%
- Among Pops: 8%

Quintana Murci et al, PNAS, 2008
Results from MtDNA analysis

- Three groups: Western pygmies, Eastern Pygmies (Mbuti) and Bantu populations

- Pygmy populations: low level of genetic diversity within pop but high inter-pop diversity

- Bantu populations: high level of internal genetic diversity but low levels of inter-pop diversity
Quintana-Murci et al

- MtDNA, 1404 individuals, 20 Bantu, 9 Pygmy
- L1c (« farmers » L1c, HG L1c1a)
- Initial divergence between « farmers » and HG at 70,000 BP
- Asymmetric gene flow
- New contact at 40,000 BP
Berniell-Lee et al.

- 41 single nucleotide polymorphism, 18 STR
- 883 individuals, 22 « farmers », 3 HG
- Early paternal traces erased by neolithic expansion
- Presence of R1b1 : trace of southward expansion (before Bantu migrations)
Verdu et al.

• 28 autosomal tetranucleotide microsatellite loci
• 604 individuals, 12 « farmers » and 9 HG
• ABC
• Diversification of HG around 2800 BP
Patin et al.

- 24 independent non-coding regions (33 kb/individual in 236 samples)
- 5 « farmers » and 7 HG
- Separation between two groups about 60,000 years ago
- Separation between EHG and WHG about 20,000 years ago
Molecular studies on Bantu migrations

• Bantu language dispersal involves human migrations
• Y-chromosomal diversity in Bantu populations is much lower than mtDNA diversity
• Haplogroups: E3a* and E3a7 (larger than Bantu)
• Role of patrilocality and polygyny (Bantu speaking males marrying local women): L1c1a1a (« pygmy ») and L0d (Ju speaking)
Chronological data

• 70.000 BP: Separation between « Bantu ancestors » and « Pygmy » ancestors

• 20.000 BP: Separation between eastern and western Pygmies

• 3.000 BP: Separation of Western Pygmy groups
Agriculture and population size

• Great demographic impact (Hassan)
• 10 km² for one hunter-gatherer
• 10 agriculturalists per km²

• Ratio : 1 to 100
Agriculture vs. Hunting-gathering

• Higher food yields per area
  (higher population density)

• Sedentarism (storage of food)

• Higher resistance to diseases (smallpox, measles)
Fig. 1. Archaeological map of agricultural homelands and spreads of Neolithic/Formative cultures, with approximate radiocarbon dates.

Diamond and Bellwood, Science 2003
Fig. 2. Language families of the Old World and their suggested expansions. Map based on information in (87) and other sources. Numbered examples discussed in text are 1 (Bantu), 3a to 3c (Austro-Asiatic, Tai, and Sino-Tibetan, respectively), 6 (Trans New Guinea), 7 (Japanese), 8 (Austronesian), 9 (Dravidian), 10 (Afro-Asiatic), 11 (Indo-European). Other possible examples mentioned only briefly: A (Turkic), B (Nilo-Saharan).

Diamond and Bellwood, Science 2003
Population size and political complexity as a function of agriculture

Walker and Hamilton, 2010
Synthesis and possible explanations

• 70,000 BP: Separation between « Bantu ancestors » and « Pygmy » ancestors
  (because of climatic change or volcanic winter (Toba eruption))?

• 20,000 BP: Separation between eastern and western Pygmies
  (because of Equatorial forest split?)

• 3,000 BP: Separation of Western Pygmy groups
  (because of increasing Bantu populations : climatic change, agriculture)